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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,987	12/08/2003	Akiharu Miyanaga	740756-2681	1100

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EXAMINER	
MARKHAM, WESLEY D	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 04/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/728,987	MIYANAGA ET AL.	
	Examiner	Art Unit	
	Wesley D Markham	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 08 December 2003 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 08/426,483.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claim 1 is currently pending in U.S. Application Serial No. 10/728,987, and an Office Action on the merits follows. The examiner notes that the appropriate continuity data was supplied by the applicant in an application data sheet (ADS) filed on 12/8/2003.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copies of the priority documents (i.e., JP 02-254520, JP 02-254521, and JP 02-254522, filed on 9/25/1990) have been filed in parent Application No. 08/426,483, filed on 4/20/1995.

Drawings

3. The 5 sheets of formal drawings filed by the applicant on 12/18/2003 are acknowledged by the examiner.
4. The drawings are objected to because the axes of Figures 3A, 3B, 3C, 4, 6A, 6B, and 6C are not labeled, thereby rendering the aforementioned figures confusing. Correction is required.
5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: “12”, “13”, “22”, “23”, and “24” in Figure 1, and “29” in Figure 5. Correction is required.
6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "30" has been used to designate both a space in Figure 1 and a pulse in Figure 4. Correction is required. The aforementioned objections to the

drawings will not be held in abeyance, and a proper reply (i.e., proposed drawings corrections, corrected drawings, and/or an amendment to the specification) is required in order to avoid abandonment of the application.

Specification

7. The title of the invention, "METHOD FOR FORMING A FILM", is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. A suggested title of the invention is, "PULSED PLASMA CVD METHOD FOR FORMING A FILM."
8. The abstract of the disclosure is objected to because the statement, "The process enables deposition of a uniform film having excellent adhesion to the substrate, at a reduced power consumption" speaks to the purported merits of the invention. The applicant is reminded of the proper content of the abstract of the disclosure, specifically that it should not refer to the purported merits or speculative applications of the invention. Correction is required. See MPEP § 608.01(b).
9. The disclosure is objected to because of the following informalities:
   - page 4, paragraph 2 – The statement, "the process according to the present invention utilizes plasma grow discharge..." is confusing because it is unclear whether the applicant is attempting to refer to "plasma glow discharge" (i.e., the word "grow" appears to be a typographical error and should read "glow").
   - page 9, paragraph 3 – The statement, "that is by adjusting current flowing the Helmholtz coil 5" is confusing and appears to contain a typographical error. The

applicant is suggested to change the statement to read, "that is by adjusting current flowing through the Helmholtz coil 5."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Specifically, **Claim 1** recites, in part, "supplying a pulsed electromagnetic energy having a high frequency..." After reviewing the applicant's specification as a whole, the examiner notes that the term "high frequency" is not defined by the applicant (e.g., is a "relative term"). Additionally, the term "high frequency" does not appear to have a definition that is recognized throughout the art of plasma CVD. Therefore, It is unclear what range of frequencies is encompassed by the "high frequency" limitation, and one skilled in the art would not be reasonably apprised of the scope of the claimed invention.

13. Additionally, **Claim 1** contains the limitation, "wherein a photo energy is applied to said reactive gas..." It is unclear what types of energy (e.g., visible light, UV light, infrared radiation, laser light, x-ray radiation, etc.) are encompassed by the term "photo energy", as the applicants' specification only mentions that, "a light (such as

ultraviolet (UV) light) may be simultaneously irradiated to the activated species to maintain the activated state..." (page 6, paragraph 2). In other words, the term "photo energy" is not defined (or even mentioned) by the applicant in the body of the specification and does not, to the examiner's knowledge, have an art-recognized definition. As such, one skilled in the art would not be reasonably apprised of the scope of the applicant's claim (i.e., because it is unclear what types of energy / radiation are included and excluded from the claim by the "photo energy" limitation).

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Koinuma et al. (USPN 4,933,300).

16. Regarding **Claim 1**, Koinuma et al. teaches a process for forming a film (Abstract), the process comprising the steps of introducing a reactive gas into a reaction chamber (Figure 4, Col.2, lines 35 – 45, Col.3, lines 12 – 14, Col.4, lines 61 – 68, Col.5, lines 1 – 25), supplying a pulsed electromagnetic energy having a microwave or RF (i.e., "high") frequency to the reactive gas sufficient to convert the reactive gas into a plasma, and forming a film on the surface of an object, wherein a photo

energy is applied to the reactive gas during the pulsed electromagnetic energy (See Figure 2, Col.2, lines 55 – 68, Col.3, lines 1 – 25, Col.4, lines 40 – 56, Col.6, lines 14 – 42). See especially Figure 2, which shows a pulsed plasma reaction with a continuous supply of photo energy. Koinuma et al. teaches that the electromagnetic energy can be RF or microwave energy (Col.4, lines 41 – 48), which the examiner has reasonably interpreted to be "high frequency". While Koinuma et al. does not explicitly teach that the photo energy is applied to maintain an activated state of the plasma, the method taught by Koinuma et al. contains all the process steps and limitations of applicant's Claim 1 as set forth above. Therefore, unless essential process steps or limitations have been omitted from the applicant's claim, the photo energy applied in the process of Koinuma et al. would have inherently maintained an activated state of the plasma, as required by the applicant's claim. For further support of the examiner's position, please see Ackermann et al. (USPN 5,062,508), which teaches that UV radiation (i.e., a type of photo energy taught by Koinuma et al.) promotes the formation of a plasma of reaction gases so that a smaller field intensity is sufficient to excite the plasma (Col.3, lines 17 – 33).

Double Patenting

17. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re*

Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

18. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

19. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. **Claim 1** is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over both (1) Claim 8 of U.S. Patent No. 5,626,922 in view of Ohnishi et al. (USPN 4,812,712) and (2) Claim 22 of U.S. Patent No. 6,110,542. Although the conflicting claims are not identical, they are not patentably distinct from each other.

21. Regarding the rejection over USPN 5,626,922, Claim 8 of '922 teaches all the limitations of independent Claim 1 of the instant application, except forming a film using the plasma method. Specifically, the claims of '922 teach the genus of "plasma processing" without explicitly teaching film forming. Ohnishi et al. teaches that the genus of "plasma processing" was known at the time of the applicant's invention to include the species of film forming (Col.1, lines 5 – 14). Therefore, one of ordinary

skill in the art would have reasonably expected the genus of "plasma processing" of the claims of '922 to include the species of film forming as taught by Ohnishi et al. One of ordinary skill in the art would have recognized that the benefits of the "plasma processing" of the claims of '922, such as a maintained activated plasma (Claim 8), would have been beneficial in a film forming process and therefore would have been motivated to form a film using the "plasma processing" method of Claim 8 of '922.

22. Regarding the rejection over USPN 6,110,542, Claim 22 of '542 teaches all the limitations of Claim 1 of the instant application – therefore, one of ordinary skill in the art would have necessarily (i.e., would have been motivated to have) carried out the applicant's claimed process when carrying out the process taught by Claim 22 of '542. Specifically, the claims of '542 refer to forming a film comprising carbon, which is inclusive of forming a film in general (as required by the applicant's claim).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wesley D Markham
Examiner
Art Unit 1762

WDM

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